Ocean Quahog
by
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     The ocean quahog, *Arctica islandica*, is a bivalve mollusk found in temperate and boreal waters on both sides of the North Atlantic. Distribution in the western North Atlantic ranges from Newfoundland to Cape Hatteras from depths of 8 to 256 m. Quahogs are rarely found where bottom water temperatures exceed 16º C, and they occur progressively further offshore in the south between Cape Cod and Cape Hatteras. They can occur in a variety of substrates, but are often associated with fine sand. In the Gulf of Maine region, ocean quahogs are distributed in relatively nearshore waters, with fishable concentrations 3 to 7 mi from shore.

     In the Middle Atlantic region, ocean quahog populations are composed primarily of relatively large, old individuals greater than 70 mm (2.8 in.) in shell length. In contrast, Gulf of Maine populations, primarily off eastern Maine, are composed of smaller individuals which suggests higher recruitment there. Growth rates of ocean quahogs are lower in the Gulf of Maine than in Middle Atlantic areas. Results of mark-recapture, shell banding, and length frequency studies indicate that the ocean quahog has a longevity of more than 100 years, and that growth after age 20 is exceedingly slow. Spawning occurs over a protracted interval from summer through autumn. Free-floating larvae develop slowly (more than 30 days until settling), and thus may drift far from their source.

     The principal gear used in the fishery is the hydraulic clam dredge. Until the early 1990s, most ocean quahogs were caught off New Jersey and the Delmarva peninsula. The fishery has been moving north for several years and significant catches are now taken off Long Island and southern New England. Recreational and foreign fishing in the Exclusive Economic Zone (EEZ) are insignificant. The EEZ fishery is managed under the Surf Clam-Ocean Quahog Fishery Management Plan (FMP) of the Mid-Atlantic Fishery Management Council. Amendment 8 of the FMP, approved in 1990, instituted a new individual transferable quota (ITQ) system for both surfclams and ocean quahogs. In 1999, a separate quota was set for the small, unique fishery in Maine.

     Offshore exploitation began off New Jersey and Maryland about 1976, when steady declines in offshore Mid-Atlantic surfclam stocks combined with a massive die off of surfclams off New Jersey stimulated fishing for the deeper-dwelling ocean quahog. Total ocean quahog landings increased dramatically between 1976 and 1979, from 2,500 to 15,800 mt of meats per year, and increased further to 17,900 mt in 1984. Annual landings exceeded 20,000 mt from 1985 to 1996. Due to recent quota reductions, annual landings declined in 1997 (19,900 mt) and in 1998 (18,100 mt). EEZ landings from 1999 (17,600 mt) and 2000 (14,900 mt) were below the

annual quota (20,411 mt). Most landings are currently derived from EEZ waters off Southern New England, Long Island, and New Jersey. Quahogs are also taken in the EEZ off Maine, and in state waters off Rhode Island and Massachusetts. Landings from the coast of Maine are primarily composed of small quahogs of about 50 mm (2 in.) shell length, while larger quahogs are landed in Middle Atlantic waters for processed clam products.

Resource surveys for ocean quahogs have been conducted by the NEFSC since the early 1980s. Swept-area calculations indicate a stock biomass (meat weight) of about 1.6 million mt in 1999. Of this total biomass, approximately 3 percent is found off Delmarva, 10 percent off New Jersey, 21 percent off Long Island, 24 percent off Southern New England, and 42 percent on Georges Bank. A biomass dynamics model gave regional biomass estimates similar to those from the swept-area calculations.

Trends in fishery performance have been documented using catch and effort data from mandatory logbook submissions. In the Mid-Atlantic (New Jersey and Delmarva), landings have declined, especially after 1991, and commercial catch rates have declined since 1987. In the absence of substantial new recruitment, this trend toward lower catch rates is likely to continue in the New Jersey and Delmarva areas.

In spite of declines in catch rates off Delmarva and New Jersey, fishery-wide catch rates have held steady since 1983 due to fishing on new grounds to the north and east. The expansion reached the Long Island area in 1991 and 1992, and the Southern New England area in 1993. From 1996 to 2000, catch rates off Southern New England have declined. Although a substantial ocean quahog resource exists on Georges Bank, that area has been closed to harvesting since 1990 due to the risk of paralytic shellfish poison (PSP).

Ocean quahogs are a slow growing, unproductive species. $F_{1997-1999}$ (0.015) was below the overfishing definition level of $F_{25\%} = 0.042$. Although annual landings are approximately only 2 percent of the total estimated stock, greater landings are probably not sustainable. Once an area is depleted, recovery time is expected to be extremely long.

For further information

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Summary Status

Long-term potential catch (MSY)	=	22,000 mt
Biomass corresponding to MSY[1]	=	$B_{MSY} = 1,000,000$ mt
Minimum biomass threshold	=	½ $B_{MSY} = 500,000$ mt
Stock biomass in 1999	=	1,600,000 mt (Implies stock was not overfished)
$F_{Threshold}$	=	$F_{25\%} = 0.042$
F_{Target} [2]	=	$F_{0.1} = 0.022$
$F_{1997-1999}$	=	0.015 (Implies overfishing was not occurring)
Age at 50% maturity	=	8 years (males), 11 years (females)
Size at 50% maturity	=	55 mm (2.1 in.) shell length
Assessment level	=	Biomass Dynamics Model
Management	=	Surfclam and Ocean Quahog FMP

M=0.02 $F_{0.1}$=0.022 $F_{25\%}$=0.042 F_{max}=0.065

[1] Assumes B_{76} = virgin biomass level.
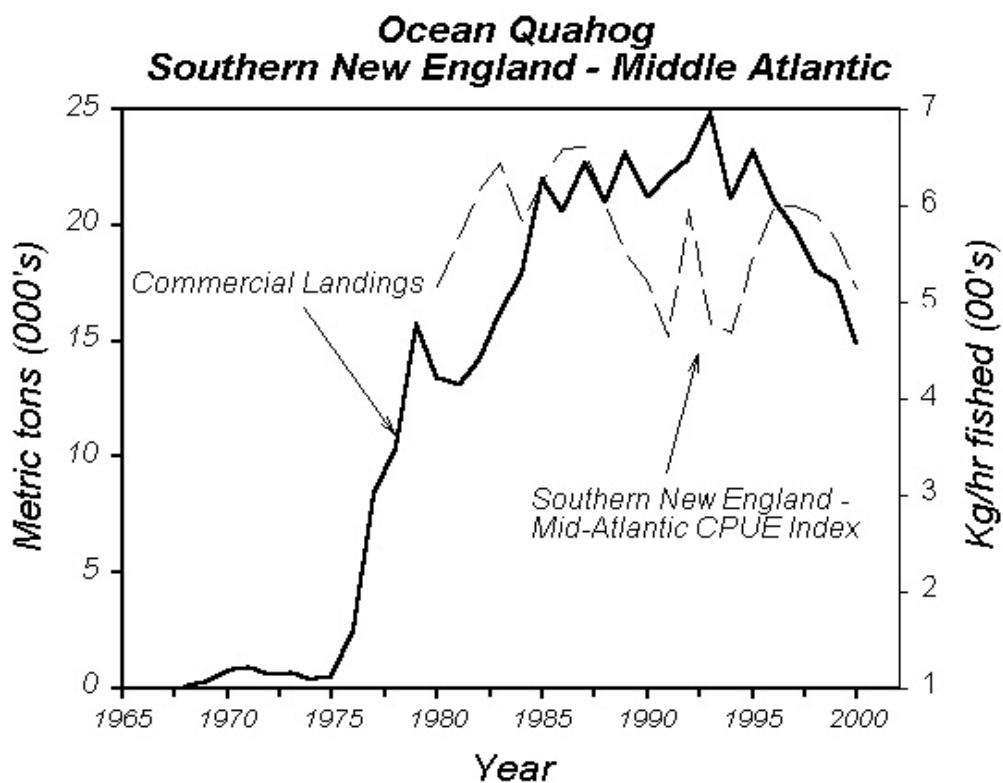[2] Applied to the exploited region (i.e., Georges Bank excluded).

Ocean Quahog
Southern New England - Middle Atlantic

Table 32.1   Recreational catches and commercial landings (thousand metric tons, meats)

Category	1981-90 Average	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
					Year						
U.S. recreational	-	-	-	-	-	-	-	-	-	-	-
Commercial											
United States											
EEZ	18.5	22.1	22.5	21.9	21.0	21.2	20.1	19.7	18.0	17.6	14.9
State	0.8	0.0	0.4	2.9	0.1	2.1	1.0	0.2	0.1	0.0	0.0
Canada	-	-	-	-	-	-	-	-	-	-	-
Total nominal catch	19.2	22.1	22.9	24.8	21.2	23.3	21.1	19.9	18.1	17.6	14.9